MARSHALL STAR

Marshall Space Flight Center — Nov. 2, 2000

'We bring people to space — We bring space to people'

For risk reduction

Marshall seeks RLV proposals

by Martin Burkey

To help make space travel dramatically cheaper and safer than it is today, NASA is asking industry, academia and others to propose technologies, experiments and other risk reduction activities to be conducted over the next five years for the 2nd Generation Reusable Launch Vehicle Program. This is the next major step in developing the "Highway to Space."

"Technologies developed and tested under the 2nd Generation Reusable Launch Vehicle Engineering and Risk Reduction program will enable the start of full scale development of a reusable launch system in 2005 — with flight operations anticipated in the 2010 timeframe," program manager Dan

*See **RLV** on page 9*

Photo by Doug Stoffer, NASA/Marshall Space Flight Center

Safety is Universal

Marshall Center Deputy Director Carolyn Griner unveiled Marshall's four safety mascots at Safety Awareness Day last week. See awards photos, pages 4-7. For additional photo coverage of the day's activities, see "Inside Marshall."

Shepherd leads crew into new era in space history

American astronaut Bill Shepherd is leading a new era in space history. He and two cosmonauts launched Tuesday, in a Russian Soyuz spacecraft from the Baikonur Cosmodrome in Kazakhstan, to their new home aboard the International Space Station. If all goes well on this and future missions, Oct. 30, 2000, will be the last day on which there were no human beings in space.

Shepherd, of Babylon, N.Y., is commander of the three-person Expedition 1 crew, the first of several crews that will live aboard the space station for periods of about four months. He is accompanied by cosmonauts Yuri Gidzenko, commander of the Soyuz, and flight engineer Sergei Krikalev on this historic journey.

*See **Shepherd** on page 9*

SSME test failure due to fuel system contamination

A detailed review of a Space Shuttle Main Engine test mishap, June 16, at NASA's Stennis Space Center, Miss., has revealed that special tape was left behind inside the engine during processing, contaminating the system.

"Bob Sackheim and his team did an excellent job of getting to the root cause of this incident," said Joseph Rothenberg, NASA associate administrator for space flight. "Clearly this incident was preventable. We must be just as vigilant with our test hardware as we are with our precious flight engines. Complacency has no place in space flight."

Rothenberg appointed Robert Sackheim, assistant director and chief engineer for space propulsion at the Marshall Center, to assess the main engine test mishap.

The investigation team found that nearly 24 square inches of tape, routinely used as a temporary closure or protective barrier

*See **SSME** on page 11*

NASA awards $1.15 billion contract for Shuttle External Tanks to Lockheed Martin Space Systems

by Lynnette Madison

NASA and Lockheed Martin Space Systems, of New Orleans, La., have completed negotiations for production of 35 additional Super Lightweight External Tanks for the Space Shuttle Program.

The six-year contract, worth approximately $1.15 billion, includes the manufacture, assembly, test and delivery of the Super Lightweight Tanks and the operations and maintenance of NASA's Michoud Assembly Facility in New Orleans. The contract also includes activities at the Marshall Center and Kennedy Space Center, Fla.

"I am pleased with the profit structure of this contract which is designed to assure the delivery of a quality product and to reward the contractor and the employees on the basis of performance," said Jerry Smelser, manager of the External Tank Project Office at the Marshall Center. "In my opinion, the negotiation process has resulted in a win-win contract. This is a major milestone for Lockheed-Martin, the External Tank Project Office, for the Center and for the Space Shuttle Program."

This sixth production of tanks will be the first comprised totally of Super Lightweight Tanks.

This latest version of the tank — which flew for the first time in June 1998 — is the same size as the tank it replaces, but is about 7,500 pounds (3,401.9 kilograms) lighter. The weight reduction allows the Shuttle to carry more payload.

The Super Lightweight Tank features major changes in materials and design. Its liquid hydrogen tank and the liquid oxygen tank are constructed of a new aluminum lithium — a lighter, stronger material than the metal alloy used to manufacture previous External Tanks.

The External Tank, which holds the liquid hydrogen fuel and liquid oxygen for the Shuttle's three main engines, is the largest single component of the Space Shuttle and the only part of the Shuttle that is not reused. Standing 154 feet (46.9 meters) tall, the gigantic rust-colored tank is taller than a 15-story building and is as wide as a silo with a diameter of about 27 1/2 feet (8 meters). During launch, the tank also acts as the structural backbone for the Shuttle orbiter and Solid Rocket Boosters attached to it.

The first tank of the sixth production is scheduled for delivery to the Kennedy Space Center in 2002.

The writer, employed by ASRI, supports the Media Relations Department.

Photo by Dennis Olive, NASA/Marshall Space Flight Center

The Marshall Center and Lockheed Martin Space Systems Company signed a contract at Marshall last Friday for the External Tank Sixth Production and Michoud Facility Operations and Maintenance. The contract procures 35 additional Super Lightweight External Tanks through fiscal year 2006. Signing the agreement are Dennis Deel, seated center left, president of Lockheed Martin Space Systems Company, and Steve Beal, seated center right, director of Marshall's Procurement Office. Other representatives from Lockheed Martin and the Marshall Center look on.

STS-106 crew members, front row from left, Altman, Lu and Wilcutt. Back row from left, Dr. Boris V. Morukov, Mastracchio, Burbank and Col. Yuri Ivanovich Malenchenko.

Crew visit Thursday

Space Shuttle mission STS-106 crew members visit Marshall Thursday. Commander Terrence Wilcutt, pilot Scott Altman and mission specialists Edward Lu, Rick Mastracchio and Daniel Burbank will present mission highlights at 11 a.m. in Morris Auditorium. In the afternoon, the crew will present Silver Snoopy awards and attend a fish fry from 5-7 p.m. outside the Bldg. 4203 cafeteria.

NASA administrator reacts to FY 2001 appropriation

The following is a statement by NASA Administrator Daniel S. Goldin concerning the FY 2001 VA-HUD-Independent Agencies Appropriations Bill.

The President signed into law Oct. 27, the FY 2001 VA-HUD-Independent Agencies appropriations bill.

"Thanks to the efforts of key members of the House and Senate, and with the support of the Administration, this measure provides an excellent budget for NASA. Our supporters in the Congress faced considerable difficulties in reaching this outcome, and we should all be very grateful for their championing of the Nation's civil space and aeronautics program.

The bill appropriates $14.285 billion for NASA for FY 2001. This is $250 million above the President's budget request, and $633 million more than the FY 2000 level. The bill fully funds the President's program for NASA, including all high-priority initiatives — the Space Launch Initiative, Shuttle Upgrades, the International Space Station and Living With a Star.

The bill includes funding, as proposed by NASA, for two Mars rover missions in 2003. At a time when the public has become increasingly concerned regarding aviation safety, the Congress also fully funded the Administration's proposals for the Small Aircraft Transport System (SATS) program and the Aviation Systems Capacity Program.

Finally, the bill provides extended buyout authority for NASA to assist in workforce rebalancing and restructuring without loss of full-time employees, and for submittal of the FY 2002 budget in a full-cost mode.

"Very importantly, you — the men and women of NASA — are to be credited for this robust budget. This is a budget that is moving in the right direction. The Congress has recognized that the revolution has taken hold at NASA, and that our Faster, Better, Cheaper way of doing business has allowed us to do more for less, with spectacular mission success, while increasing productivity. The Congress knows that it is performance that counts, and this budget is a tribute to NASA's performance.

"While NASA will, no doubt, face some challenges in addressing emergent needs in Earth Science and Space Science, we are very fortunate to be starting the fiscal year from a great vantage point. Congratulations to all, and thank for your dedication and hard work."

Goldin

Marshall celebrates Safety Awareness Day

Marshall celebrated Safety Awareness Day Oct. 25. Safety awards were presented in three categories: manager, individual and team.

Vendors displayed safety related exhibits and gave out safety items. Door prizes were given away. Chick-fil-A provided sack lunches. And the Engineering Directorate's Elite won Marshall's Safety Bowl.

Seven Marshall managers received Safety Excellence Awards from Center Director Art Stephenson and astronauts Rex Walheim and Ellen Baker. Sixteen individuals and six teams also received awards.

Photos by Emmett Given, NASA/Marshall Space Flight Center

Alex McCool, second from right, manager of Marshall's Space Shuttle Project Office, receives a Safety Excellence Award for significant leadership contributions and commitment to safety awareness at Marshall and offsite facilities by promoting a safe and healthy work place for the Shuttle team. With him are astronaut Rex Walheim, left; Marshall Center Director Art Stephenson, second from left; and astronaut Ellen Baker, right. Other managers receiving awards were Dr. N. Jan Davis, deputy director of the Flight Projects Directorate; Phillip Robbins of Computer Sciences Corp.; Richard Smith of Hernandez Engineering Inc.; Alberto Duarte of the Space Transportation Directorate; and Donnie L. George of United Space Alliance. Also receiving an award, but not pictured was Sheila S. Cloud, director of Center Operations Directorate.

Melissa Emery and Patricia Chapman accept awards on behalf of the Hernandez Engineering Inc. Payload Safety Team. Frank Olinger is not pictured.

Ellanee Bright, left, and Becky Belyeu receive team awards on behalf of Hernandez Engineering and Marshall's Safety and Mission Assurance Office.

Davis

Robbins

Smith

Duarte

George

The Engineering Directorate's Elite won the Marshall Safety Bowl in the final contest against Flight Project Directorate's Health Nuts. Elite team members are Tenina Bili, Linda Brewster, Amelia Gillis, John Jennings, Johnny Maroney and Louise Semmel.

Individual Safety Excellence Awards were presented to Johnney C. Mason, Hernandez Engineering; Stephen S. Austin, Hernandez Engineering; Tommy Powell Jr., Hernandez Engineering; Harold Hopkins, Computer Sciences Corp.; Gene A. Hartsfield, FD21; Darlene M. Garner, MP71; Shawn K. Wallace, ED13; Samuel E. Davis, ED36; Charles E. Henderson, ED34; Jo E. Hahs, ED23; Steve G. Androlake, ED22; Steve R. Brewster, ED27; Felix Crunk, TD70; John Webster, TD70; James R. Cantrell, SD43; and Deborah F. Lengeddy, SD43.

Hopkins

Hartsfield

Garner

Wallace

Davis

Henderson

Mason

Austin

Powell

Hahs

Androlake

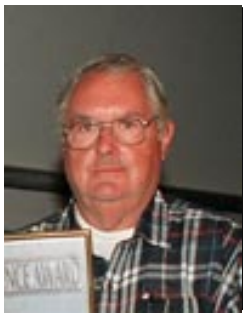
*See **Safety Day** on page 6*

Safety Day

Continued from page 5

Brewster

Crunk



Webster

Cantrell

Longeddy

Team awards included ED26, Ai Signal Research Inc., Sverdrup Technologies and S3. Individuals cited are James Agee, Ken Atchley, Keith Chavers, Jahn Danson, Sharon Ferguson, Amos Glenn, Bob Keener, David Kelley, Freida Lowery, John Lowery, Mark Norman, Jerome Pitt, Randy Powers, Manuel Schultz, Donna Severance, Danny Speakman, Mark Springer, Randy Stephens, Steve Stephens, Debra Terrell, Tim thornton, Lee Wheeler and Tony Williams.

The Safety and Mission Assurance Team includes John L. Frazier, Ron C. Mize, Louis F. Lollar, David C. Morgan, Barbara A. Kelso, Michael D. Smiles, John L. Beasley, Alan L. Clark, Gayla C. Warren, Catherine L. Grant, Karen C. McTaggart, and Mahmoud R. Naderi.

From left, Allums, Matthews and Duarte represent the Space Transportation Directorate Building Managers Team.

The Space Transportation Directorate Building Managers Team includes Herb Zollar, George Schmidt, Rhonda Pepper, Philisha Matthews, Andrew Hornfeck, Alberto Duarte, Jeff Hamilton, Robert Lake, Tim Sanders, Bobby Hubbard, Paul Dumbacher, Henry Brewster, Collie Kellett, Steve Allums, Jerry Cook, Lem Vaughn, Dennis Strickland, Van Blankenship, and Jeff Moore.

Safety Bowl Team members are Angela Lovelady, Darlene Garner, Debra Hallmark, David Burks, Donna Jackson, Elia Ordonez, Gary Hudson, George Xenofos, Hansel Gill, Irene Taylor, Joel Best, Lonia Moore, Lynn Southgate, Martha Milton, Michael McLean, Patricia Edwards, Phillip Robbins, Richard Samaniego, Robert McKemie, Scott Schutzenhofer, Tim Walton, and Todd MacLeod.

NASA outlines future Mars exploration program

By means of orbiters, landers, rovers and sample return missions, NASA's revamped campaign to explore Mars, announced last week, is poised to unravel the secrets of the Red Planet's past environments, the history of its rocks, the many roles of water and, possibly, evidence of past or present life.

Six major missions are planned in this decade as part of a scientific tapestry that will weave a tale of new understanding of Earth's sometimes enigmatic and surprising neighbor.

The missions are part of a long-term Mars exploration program which has been developed over the past six months. The new program incorporates the lessons learned from previous mission successes and failures, and builds on scientific discoveries from past missions.

The NASA-led effort to define the program well into the next decade focused on the science goals, management strategies, technology development and resource availability in an effort to design and implement missions which would be successful and provide a balanced program of discoveries.

International participation, especially from Italy and France, will add significantly to the plan. The next step will be an 18-month programmatic systems engineering study to refine the costs and technology needs.

In addition to the previously announced 2001 Mars Odyssey orbiter mission and the twin Mars Exploration Rovers in 2003, NASA plans to launch a powerful scientific orbiter in 2005.

This mission, the Mars Reconnaissance Orbiter, will focus on analyzing the surface at new scales in an effort to follow the tantalizing hints of water from the Mars Global Surveyor images and to bridge the gap between surface observations and measurements from orbit. For example, the Reconnaissance Orbiter will measure thousands of Martian landscapes at 8-to-12-inch (20-to-30-cm) resolution, good enough to observe rocks the size of beach balls.

NASA proposes to develop and to launch a long-range, long-duration mobile science laboratory that will be a major leap in surface measurements and pave the way for a future sample return mission.

NASA is studying options to launch this mobile science laboratory mission as early as 2007. This capability will also demonstrate the technology for accurate landing and hazard avoidance in order to reach what may be very promising but difficult-to-reach scientific sites.

NASA also proposes to create a new line of small "Scout" missions which would be selected from proposals from the science community, and might involve airborne vehicles or small landers, as an investigation platform. Exciting new vistas could be opened up by this approach either through the airborne scale of observation or by increasing the number of sites visited. The first Scout mission launch is planned for 2007.

In the second decade, NASA plans additional science orbiters, rovers and landers, and the first mission to return the most promising Martian samples to Earth. Current plans call for the first sample return mission to be launched in 2014 and a second in 2016.

Options which would significantly increase the rate of mission launch and/or accelerate the schedule of exploration are under study, including launching the first sample return mission as early as 2011.

Technology development for advanced capabilities such as miniaturized surface science instruments and deep drilling to several hundred feet will also be carried out in this period.

Mars missions can be launched every 26 months during advantageous alignments — called launch opportunities — of the Earth and Mars, which facilitate the minimum amount of fuel needed to make the long trip.

Photo by Dennis Olive, NASA/Marshall Space Flight Center

Getting a flu shot

Kathy Lundy receives a flu shot from Hemsi employee Allison Boglen. The next round of flu shots will be from noon-3 p.m. Nov. 7 in Bldg. 4666, room 250. Please wear short sleeves. NASA employees and contractors will need to show badges and sign a release form prior to receiving the shot.

Shepherd

Continued from page 1

Aboard the station, the crew will help with assembly tasks as new elements, including the U.S. Laboratory, are added to the orbiting outpost. They will also conduct early science experiments.

Shepherd, a 1971 graduate of the U.S. Naval Academy in Annapolis, Md., and a Navy Seal, dreamed of becoming a pilot, but did not meet the eyesight requirements. He became a Navy diver instead, applied for the astronaut program in 1980 and was accepted in 1984.

In three Space Shuttle missions, he has logged 440 hours in space. He flew as a mission specialist on Space Shuttle missions STS-27 in 1988, STS-41 in 1990 and STS-52 in 1992. To prepare for this mission, he has trained extensively in the United States and Russia.

The International Space Station is the most ambitious engineering project in world history. The program involves 16 partner countries, including the United States, Russia, Japan, the 11 members of the European Space Agency and Brazil, who have joined together to build the most capable space laboratory ever constructed.

When complete in 2006, the International Space Station will be about the size of a three-bedroom house and will be home to up to seven astronauts at a time, who will work on experiments running the gamut of scientific disciplines.

Crew members, from left, are Russian cosmonaut Sergei Krikalev, U.S. astronaut Bill Shepherd, and cosmonaut Yuri Gidzenko.

RLV

Continued from page 1

Dumbacher said.

The program — managed by Marshall and supported by NASA Centers across the country — is aimed at developing a privately owned, commercially competitive reusable launch vehicle that will be 10 times cheaper and 100 times safer than 1st generation systems such as the Space Shuttle.

"Greater commercial development and exploration of space depend on making launch transportation safer and less expensive," Dumbacher said. "That's why this program is one of NASA's highest priorities."

NASA Research Announcement 8-30 asks U.S. industry, educational institutions, nonprofit organizations and federal agencies to submit proposals in 10 areas: system engineering and architecture definition, airframe, vehicle subsystems, internal vehicle health monitoring, operations, upper stages, propulsion, flight mechanics, flight demonstrations and NASA-unique requirements such as life support and crew escape systems.

"Proposals funded under this program will further define the technical requirements for achieving NASA's safety and payload goals, and will initiate the key ground and flight risk-reduction activities necessary to develop vehicles, ground support equipment and operations for a second generation reusable launch system," Dumbacher said. "We will mature second generation technologies, such as lightweight structures, long-life rocket engines, vehicle subsystems, computerized maintenance, thermal protection, ground operations and more."

NRA 8-30 was published earlier this month. More than 350 industry representatives recently attended a program briefing at the Marshall Center. Technical proposals are due Nov. 27, with cost proposals due Dec. 4. NASA expects to award multiple contracts totaling approximately $900 million next spring. The total number of contracts and the dollar figure for those will be determined later.

The Marshall Center is NASA's Lead Center for Space Transportation Systems Development. Marshall's efforts are supported by Ames Research Center in Moffett Field, Calif.; Stennis Space Center in Bay St. Louis, Miss.; Kennedy Space Center, Florida; Dryden Flight Research Center in Edwards, Calif.; Johnson Space Center in Houston, Texas; Langley Research Center in Hampton, Va.; the Jet Propulsion Laboratory in Pasadena, Calif.; Glenn Research Center in Cleveland, Ohio; and the Air Force Research Laboratory, which includes research and development facilities at nine U.S. Air Force bases nationwide.

The writer, employed by ASRI, supports the Media Relations Department.

Photo by Terry Leibold, NASA/Marshall Space Flight Center

November is Native American Heritage Month

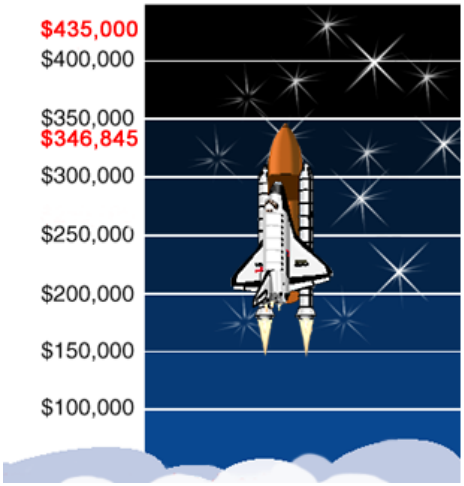
Marshall employees, who are members of the Alabama-Tennessee Trail of Tears Association, recently presented checks to organizations assisting Native Americans. From right, Amy Campbell, of Marshall's Procurement Office; Ken Campbell of EG&G; and Greg Bass of EG&G, presented a check for $10,000 to Mike Gilbert, left, executive director of the Alabama Indian Affairs Commission, to sponsor eligible Alabama Native Americans with tuition and book costs. The association also presented a $500 check to the American Indian Museum Inc., to assist it in educating students in schools throughout North Alabama and Southern Tennessee, and a $10,000 check to the University of Tennessee Chattanooga. The money was raised during the annual Trail of Tears motorcycle ride held in early September.

Center Announcements

- ***2000 FEHB Health Fair* —** The 2000 Federal Employees Health Benefits (FEHB) Open Season Health Fair will be from 9 a.m.-3 p.m. Nov. 7 in Bldg. 4203, room 1201. Open Season is Nov. 13 through Dec. 11.
- ***Veterans Day Parade* —** The Marshall team members and their families are invited to participate in the 2000 Huntsville Veterans Day Parade at 11 a.m. Nov. 11 starting at the Hilton Hotel in Huntsville. To sign up, visit the Web at: http://inside.msfc.nasa.gov/VETDAY/flyer.html Deadline is Friday.
- ***Family Volunteer Day* —** The American Red Cross will hold a family volunteer day from 1-4 p.m. Nov. 18 at the American Red Cross at 1101 Washington St. in Huntsville. Volunteers will make holiday ornaments that will be offered to the community for a donation to the Red Cross or make holiday cards for local hospitalized veterans. Responses are required. Call 536-0084, ext. 210, by Nov. 10.
- ***Cha-cha, Rumba Lessons* —** The MARS Ballroom Dance Club has scheduled cha-cha and rumba lessons on Mondays in November in the Parish Hall of St. Stephen's Episcopal Church at 8020 Whitesburg Dr. For more information, call Woody Bombara at 650-0200.
- ***Photo Lab Retirees* —** Photo Lab retirees meet the first Tuesday each month at 9:30 a.m. at Shoney's on University Drive and Memorial Parkway. For more information, call Carl Dow at 461-8181.

CFC: Marshall campaign chairwoman thanks employees

Now that the Combined Federal Campaign is well under way, I would like to thank all of you who have already given to this worthy cause. I would like to encourage those who have not yet contributed to join me in taking advantage of one of the most effective means of sharing our resources with those who really need our help. This year's theme is "Care Enough to Share Enough," and we will spread this message to others when we give through the Combined Federal Campaign.



A special thank you goes to all of you who took time from your busy day to donate your time through the Community Service Day activities. The Combined Federal Campaign not only provides much-needed contributions to local agencies — these agencies need donation of time. Your involvement greatly benefited those in real need.

Thank you for taking advantage of this most effective means of sharing in a compassionate way. Your contribution is proof that Marshall employees really do "Care Enough to Share Enough."

I would also like to take this opportunity to remind everyone of our Center Director's challenge. Art Stephenson has agreed to wash an employee's car — one drawn at random — in the parking lot, while we watch! But that is only if our Center achieves at least 95 percent participation. Let's not let him — or the CFC agencies — down!

Thank you for showing how much you care.

— Roslin K. Hicks,
Chairwoman, 2000 Combined Federal Campaign

FAST wins award

The Huntsville Area Deaf Awareness Committee last month selected the Future Assets, Student Talents (FAST) program at Marshall as the Employer of the Year. The award was presented to Margaret Nell Parker, left, FAST executive director, and Chip Dobbs, mentor of the year for the FAST program.

Upcoming Events

Software process improvement — A four-day program on software process improvement that will help organizations meet CMM-Level 3 certification requirements will be Dec. 5-8 at Goddard Space Flight Center in Greenbelt, Md. Attendees — GS-13 through SES software engineering management professionals — learn how to institutionalize industry's and NASA's software process best practices in their working environment. Nomination forms are available on the Web at: www.hq.nasa.gov/office/codef/codeft/ (click on APPL nomination form)
Call Jackie Clarke at (703) 820-4900, ext. 111 for more information.

Great Paper Airplane Contest — The American Institute of Aeronautics and Astronautics will hold its 7th Annual Great Paper Airplane Contest at 3:30 p.m. Friday in the Highbay area of Bldg. 4752, the NASA Exchange. The event is free to everyone. The contest is open to all ages in the categories of aerobatics, time of flight, distance, accuracy and artistic. An awards ceremony will be at 5:30 p.m. For more information, call Tom Hancock at 961-4002 or send e-mail to: tom.hancock@msfc.nasa.gov

SSME

Continued from page 1

during main engine processing and assembly, had been inadvertently dropped into the fuel system. Despite normal processing inspections, the tape went unnoticed before the engine was test fired.

The tape came to rest on the fuel and oxygen preburner injectors, with the majority of the tape in the fuel preburner. The tape blocked the multiple fuel-inlet holes causing an oxygen-rich mix, which rapidly increased temperatures beyond the engine's normal operating limits and melted some components upstream of the engine fuel pump.

"The engine controller performed as designed, shutting down the engine when it sensed a temperature that exceeded the safe limits set by engineers for this test," said Sackheim. "The purpose of these types of ground demonstration tests is to discover any issues prior to full certification that are related to manufacturing, assembly, processing, or design so that they will be prevented from occurring during flight, and that's what happened here."

The test was intended to be a "temperature margin" demonstration and was part of the developmental phase for a new, more robust Pratt and Whitney Advanced Technology High Pressure Fuel Turbopump.

About 5 seconds into a planned 200-second test, higher-than-expected temperatures caused the Shuttle main engine to shut itself down using its own internal safety mechanisms. The engine being tested was not a flight configuration, but a development unit used to validate the engine's capability to operate at higher-than-normal temperature levels.

Sackheim's team found the handling of, accounting for, and inspecting for loose materials, used to process and rebuild engines during normal operations were inadequate. In addition, his team concluded that the use of tape as a barrier against contamination provides the opportunity for material to be left in an engine.

Recommendations in the report to address the incident include:

• Verify all systems are free of foreign objects prior to hotfire, limit the opportunity for contamination by minimizing the use of tape and other potential contaminants, use permanent closures on joints when possible and keep joints closed at all times when not required to be open for work.

• Implement a better method of dealing with loose, non-serialized materials to ensure full accounting.

• Investigate the possibility of using reusable barriers for engine work, which can be controlled and accounted for.

The Space Shuttle Main Engine project and its prime contractor, the Rocketdyne Propulsion & Power business of The Boeing Co., are working on a plan to address the report's recommendations.

In addition, as part of NASA's emphasis on continued improvement and safety for the Space Shuttle Program, NASA has initiated an independent review of the Space Shuttle Main Engine Program and engine processing at Rocketdyne, as well as operations at NASA's Kennedy Space Center in Fla.

All Space Shuttle Main Engines have been inspected and cleared for flight. No evidence of foreign-object damage or tape was found.

The full text of the report can be found at: *ftp://ftp.hq.nasa.gov/pub/reports/2000/ssme_vol1.pdf*

Employee Ads

Miscellaneous

★ Tires for boat trailer or utility trailer, one 5.5x12", one 6.0x12", $10 each. 534-2025
★ Boy's ice hockey skates, Bauer Impact 30, size 12, $40; Century car seat, $20; medium-size dog cage, $20. 533-5942
★ 1995 Kawasaki 750 SSXi JetSki w/trailer, $2,600 obo. 830-1037
★ Chihuahua puppies, long and short hair. 757-5420
★ Kenmore microwave oven, 600/250 watts, 0.8 cu. ft., $25; miscellaneous golf clubs, 3 and 4 woods, graphite shafts, $25 ea. 881-5642
★ Storage cardboard moving boxes, small-75 cents, medium-$1, dish-pack-$1.25, garment-$2 each. 772-4205
★ Compaq IJ300 color inkjet printer, 12-x 1200 DPI, software on CD, new in box, $50. 883-8257
★ Croquet set, 6-player, instructions, $30. 772-0558
★ Bedroom set, triple dresser w/mirror, nightstand, headboard, medium oak, $285. 880-6146
★ Summit Sabre tree-stand, $85; PSE Talon re-curve bow w/arrows, accessories, $125; Pendleton virgin camo jacket, large, $150. 527-9771/Jim
★ Sears large capacity washer, will deliver, $200. 931-565-3820
★ 1993 Harley Davidson Sportster XLH 883, 14,300 miles, many extras, $8,000. 882-9053
★ 8' x 10' x 4' wood deck. Perfect for mobile home. You remove. $950. 883-5396
★ 1991 Schwinn Worldsport 10-speed, tire pump and helmet included, $125. 830-1060
★ American Racing Wheels, 15x7, set of 5, 5 spoke cast w/chrome finish, Ford 5 lug, $250. 464-5819
★ 1997 SeaDoo/Bombardier Speedster 14' boat, twin 85HP jets, Bimini top, boat cover, $8,100. 931-962-1683
★ Sears Craftsman riding mower, 42", 14.5HP, $195; Bissel carpet cleaner, $30. 682-5181
★ Tiller, 5HP, $175; mini-trampoline, $20; free-standing basketball goal, fiberglass board, spring-loaded goal, $65. 881-6040
★ French Provincial bedroom suite, off-white, two twin beds, mattress, box-springs, comforter set, dresser, nightstand, $300. 830-9507
★ Computer, AMD-550Mhz PC, Win98, 64MB RAM, 4.3GV HDD, 52X CDROM, 8MB video, $550 negotiable. 851-1854

Vehicles

★ 1985 Oldsmobile Delta 88 sedan, gray, 4-door, V-8, a/c, ps/pb, 137K miles, 4995. 772-0558
★ 1998 Monte Carlo, V-6, burgundy, 68K highway miles, 6K miles on extended warranty. 423-5425
★ 1997 Mustang, 6-cyl., auto, black w/tan interior, 88K miles, all-power, alloy wheels, $7,500 firm. 256-753-2278
★ 1997 Park Avenue sedan, red/taupe, one-owner, extended warranty. 883-6776
★ 1995 Camry LE, all-options, 4-cyl., 100K miles, one-owner, $8,599; 1986 Chevrolet, Suburban, 9-passenger, all-options, dual a/c, $3,950. 325-6000
★ 1992 Mitsubitshi 3000 GT, charcoal, leather interior, CD, a/c, pw/pdl, automatic, $10,000. 880-3854
★ 1990 Honda Accord LX, 4-door, white, AM/FM tape, 112K miles, $5,300. 859-0323
★ 1995 BMW 325ic convertible, white w/gray leather, alloy wheels, automatic, all-power, roll-over package, 70K miles, $21,500. 837-2162
★ 1994 Nissan Sentra, 96K miles, red, 4-door, automatic, a/c, $3,195 obo. 464-0660
★ 1994 Dodge Grand Caravan SE, 91K miles, one-owner, auto, rear-air, luggage rack, tinted windows, sandstone, $6,600. 355-6858
★ 1999 GMC Sierra Z71, new-style, ext. cab, 3-door, 26K miles, white/pewter, Line-X bedliner, $23,900. 851-7943
★ 1986 Suburban, 9-passenger, dual a/c, second-owner, $3,950. 325-6000
★ 1993 Dodge Grand Caravan SE, one-owner, many new parts, service records available. $5,500 obo. 895-9520
★ 1997 Ford F-250 XLT pickup, 4x4, alloy wheels, 40K miles, w/gooseneck hitch, towing package, automatic, $16,500. 931-732-4742
★ 1994 Jeep Cherokee Sport, green, 6-cyl., automatic, am/fm CD, alloy wheels, 68K miles, $7,950. 883-6416
★ 2000 Ford Ranger XLT Super Cab, a/c, ps, step side, 8K miles, $17,500. 379-4980
★ 1992 Dodge Caravan SE van, 96K miles, a/c, tape, cruise, pdl, new tires, $5,800 obo. 461-8182 or 461-4908
★ 1998 Nissan Frontier XE King Cab, a/c, bedliner, CD, custom wheels, 60K miles, red. 931-937-7830

Found

★ Franklin planner, found on 10/23, Bldg. 4666, Conference Room 243. Call 544-1303 to claim
★ Reading glasses, picnic area, Bldg. 4752 area. Call 544-4758 to claim

Free

To good home, affectionate 1-year old kitty, yellow, includes carrier. 776-2005

Wanted

★ Tape of the AL/TN football game, would like to copy. 337-8545
★ Ride to work, 7 a.m. to 3:30 p.m., Governors Drive/Huntsville Hospital area, will pay $6 per day. 534-5398
★ Two football tickets for Florida State vs. Florida Gators game, Nov. 14. 256-325-9168
★ AKC male Husky for stud services. 883-5396

Job Opportunities

Reassignment Bulletin 01-003-RE, AST, Technical Management, GS-810-14, Space Shuttle Projects Office, External Tank Project. Duty station is Michoud Assembly Facility in New Orleans. Closes Nov. 9.

Reassignment Bulletin 01-001-CP. AST, Aerospace Flight Systems, GS-861-14 (2 vacancies), Science Directorate, Science Systems Dept., Space Flight Experiments Group. Closes Nov. 6.

MARSHALL STAR
Vol. 41/No. 9

Marshall Space Flight Center, Alabama 35812
(256) 544-0030
http://www1.msfc.nasa.gov

The Marshall Star is published every Thursday by the Internal Relations and Communications Department at the George C. Marshall Space Flight Center, National Aeronautics and Space Administration. Contributions should be submitted no later than Monday noon to the Marshall Internal Relations and Communications Department (CD40), Bldg. 4200, room 101. Submissions should be written legibly and include the originator's name. Send electronic mail submissions to: intercom@msfc.nasa.gov The Marshall Star does not publish commercial advertising of any kind.

Manager of Internal Relations and Communications — Robert Champion
Editor — Debra Valine

U.S. Government Printing Office 2001-633-095-20022

PRE-SORT STANDARD
Postage & Fees PAID
NASA
Permit No. G-27